UNIVERSITY OF BORÅS

Biotechnology
Bioteknik
15 credits

Ladok Code: A01TAI
Version: 3.1
Established by: Committee for Education in Technology 2018-11-09
Valid from: Spring 2019

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Biotechnology (A1N)
Disciplinary Domain: Technology
Prerequisites:
Subject Area: Biotechnology
Grading Scale: Seven-degree grading scale (A-F)

Content
The course aims to provide basic knowledge in the field of Biotechnology. It starts with the description of structure and function of biomolecules, and will then continue with the presentation of prokaryotic, and eukaryotic microorganisms and Archea. and their structure. The role of microorganisms and their function in nature and their use in industrial processes will also be discussed. Within this moment different metabolic pathways, energy production, cell growth and genetics will be presented. The course also includes extensive laboratory exercises dealing with biochemical and biotechnological methods and analyses, culturing techniques for microorganisms and the applications of genetics and molecular biology methods.

Learning Outcomes
Learning outcomes

1. Knowledge
To be able to:
1.1 describe the structure and function of biological macromolecules, such as proteins, carbohydrates, lipids and nucleic acids
1.2 describe the function of enzymes in biochemical processes
1.3 describe the main features of biosynthesis processes, like replication, transcription and translation
1.4 describe outer and inner structures of different groups of microorganisms
1.5 describe the structure of membranes and membrane transport processes
1.6 explain different processes for energy utilization and metabolic pathways of different microorganisms
1.7 describe and explain enzyme kinetics and growth kinetics
1.8 explain the basic principles of microbial genetics with focus on utilization in biotechnological process and the link this to sustainable development
1.9 describe and use the most important analyses techniques in biotechnology, such as, chromatography, HPLC and GC-MS

2. Skills
To be able to:
2.1 apply basic biochemical, microbiological and molecular biology techniques
2.2 plan for and perform laboratory work in the field of biotechnology
2.3 to implement different biotechnological analyses methods

3. Assessment skills
To be able to:
3.1 give a critical review and evaluation of the results achieved through the laboratory work
3.2 discuss and argue for biotechnology's role in the development of a sustainable society

Forms of Teaching

Teaching methods within this course include lectures, seminars, laboratory work, project work and study visits.

The language of instruction is English. However, instruction in Swedish may occur.

Forms of Examination

The final grade on the course is gouverned by the grade achieved on the written exam. The final grade is issued when all stages are completed.

Student rights and obligations at examination are in accordance with guidelines and rules for
the University of Borås.

Literature and Other Teaching Materials

Biochemistry, by Powar, C.B., Chatwal, G.R., Himalaya Publishing House, 2007
Essential Microbiology, second edition, by Hogg, S., Wiley-Bachwell Publisher, 2013

Complementary materials will be published on PingPong.

Student Influence and Evaluation

The course is assessed in accordance with the applicable guidelines for course evaluations at the University College of Borås, where students ' views should be sought. Academy Director and course Coordinator is responsible for ensuring that evaluation is carried out.

Miscellaneous

This is a course for international students.